Kramer Electronics, Ltd.

USER MANUAL

Model:

WP-121

XGA/Unbalanced Stereo Audio Line Transmitter

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups[1] that are clearly defined by function.

Congratulations on purchasing your Kramer Wall Plate **WP-121** *XGA/Unbalanced Stereo Audio Line Transmitter*, which is available in American and European (80mm and 86mm) versions and which is ideal for:

- Presentation and multimedia applications
- Long range graphics distribution for schools, hospitals, security and stores

The package includes the following items:

- **WP-121** *XGA/Unbalanced Stereo Audio Line Transmitter*
- A 12V DC power supply
- This user manual[2]

Note: All references to **WP-121** in this manual refer to the US version (69mm) as well as to the **WP-121** 80mm and **WP-121** 86mm European versions.

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance, high resolution cables[3]

1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

2 Download up-to-date Kramer user manuals from our Web site at http://www.kramerelectronics.com

3 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com

3 Overview

The Kramer **WP-121** wall plate is a line transmitter that accepts a UXGA video and an unbalanced stereo audio signal, encodes them to a TP (Twisted Pair) signal and transmits the TP signal to a compatible TP receiver[1].

The **WP-121** *XGA/Unbalanced Stereo Audio Line Transmitter* features:

- HDTV compatibility—up to 1080p
- The option to use either[2] a 9-pin terminal block or RJ-45 output TP connector
- Kramer Power Connect™
- EDID Capture—copies and stores the EDID from a display device
- 12V DC power supply

3.1 About the Kramer Power Connect™ Feature

The Power Connect feature applies as long as the cable can carry power. This feature is available when using STP cable and the distance does not exceed 50m on standard CAT 5 cable. For longer distances, heavy gauge cable should be used (CAT 5 cable is still suitable for the video/audio transmission, but not for feeding the power at these distances).

For a CAT 5 cable exceeding a distance of 50m, separate power supplies should be connected to the transmitter and to the receiver simultaneously.

3.2 Shielded Twisted Pair/Unshielded Twisted Pair

We recommend that you use Shielded Twisted Pair (STP) cable. There are different levels of STP cable available, and we advise you to use the best quality STP cable that you can afford. Our non-skew-free cable, Kramer **BC-STP** is intended for analog signals where skewing is not an issue. For cases where there is skewing, our UTP skew free cable, Kramer **BC-XTP**, may be used. Bear in mind though, that we advise using STP cables where possible, since the compliance to electromagnetic interference was tested using those cables.

Although Unshielded Twisted Pair (UTP) cable might be preferred for long range applications, the UTP cable should be installed far away from electric cables, motors and so on, which are prone to create electrical interference.

However, since the use of UTP cable might cause inconformity to electromagnetic standards, Kramer does not commit to meeting the standard with UTP cable.

1 For example, the Kramer TP-122 or TP-122-od

2 Only one can be connected at a time to a TP receiver. Connecting both simultaneously results in neither operating

3.3 Defining the EDID

EDID (Extended Display Identification Data[1]) is a data-structure that the display provides to describe its capabilities to a graphics card connected to the display's source. The EDID enables the source, such as a PC, to "know" what kind of monitor is connected to the output.

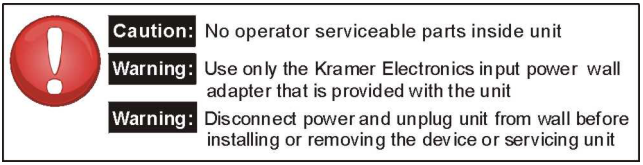
The EDID includes information, such as, the name of the manufacturer, product type, timing data supported by the display, display size, luminance data, and (for digital displays only) the pixel mapping data.

The **WP-121** is supplied with a default EDID, but it can also store and recall EDID data in non-volatile memory, allowing convenient and reliable connection to the source.

3.4 Recommendations for Achieving the Best Performance

Achieving the best performance means:

- Utilizing only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoiding interference from neighboring electrical appliances and positioning your **WP-121** away from moisture, excessive sunlight, and dust


Caution:
No operator serviceable parts inside unit
Warning:
Use only the Kramer Electronics input power wall adapter that is provided with the unit
Warning:
Disconnect power and unplug unit from wall before installing or removing the device or servicing unit

1 EDID is defined by a standard published by the Video Electronics Standards Association (VESA)

4 Defining the WP-121 XGA/Unbalanced Stereo Audio Line Transmitter

Figure 1 and Table 1 define the front panel of the **WP-121**. Figure 2 and Table 2 define the rear panel of the **WP-121**.

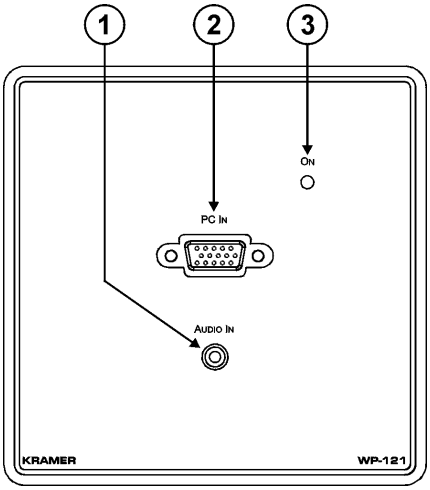


Figure 1: WP-121 Front Panel

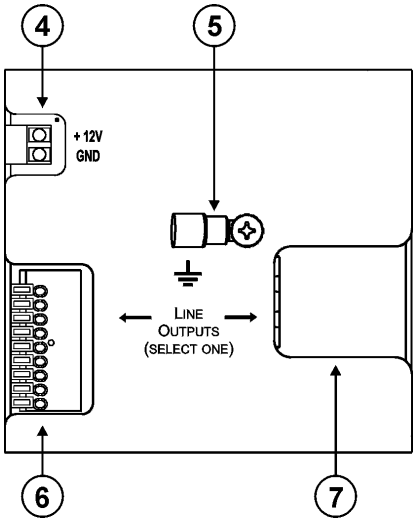


Figure 2: WP-121 Rear Panel

Table 1: WP-121 Front Panel Features

#	Feature	Function
1	*AUDIO IN* 3.5mm Mini Jack	Connect to an unbalanced stereo audio source
2	*PC IN* XGA 15-Pin HD (F) Connector	Connect to the XGA source
3	*ON* LED	Lights red when receiving power, lights green when receiving a signal from a video source

Table 2: WP-121 Rear Panel Features

#	Feature		Function
4	*+12V* PIN	Power — Removable Terminal Block	Connect to the positive (+) of the power adapter
	GND PIN		Connect to the negative (-) of the power adapter
5	⏚		Ground connection. Ring-tongue terminal and grounding screw
6	*LINE OUTPUTS*		9-Pin TP terminal block
7			RJ-45 TP connector

Table 1 and Table 2 refer also to the **WP-121** 80mm and **WP-121** 86mm shown below.

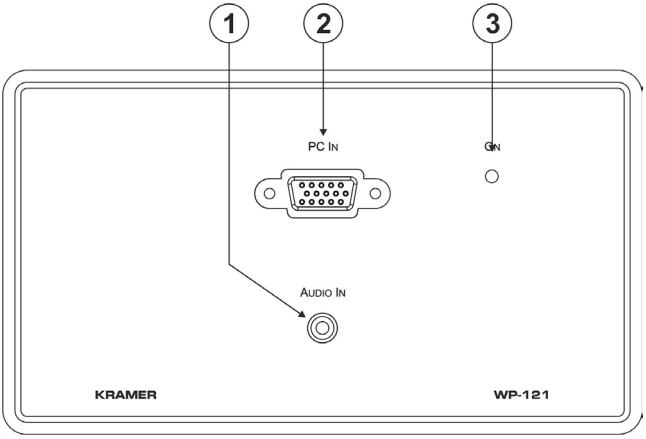


Figure 3: WP-121 80/86mm Front Panel

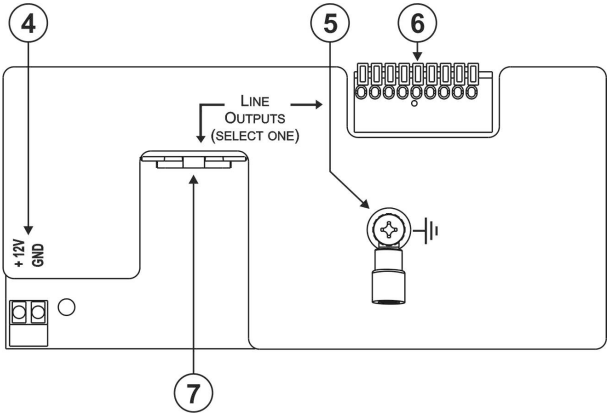


Figure 4: WP-121 80/86mm Rear Panel

5 Installing and Connecting the WP-121

Figure 5 illustrates the installation and connection of the **WP-121**.

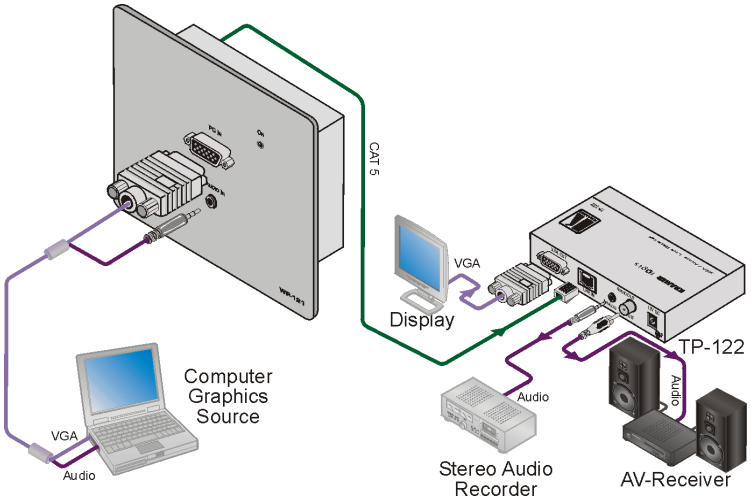


Figure 5: Installing and Connecting the WP-121

5.1 Installing the WP-121

To install the WP-121 as illustrated in the example in Figure 5:

1. Connect either the:
   - Terminal block line output of the **WP-121** to the pre-installed STP wiring in the wall box opening that connects to the TP receiver

     —or—
   - RJ-45 line output of the **WP-121** to the pre-installed STP wiring in the wall box opening that connects to the TP receiver
2. Recommended—ground the wall plate (see Section 5.3).
3. Connect the 12V DC power supply to the power terminal block[1] taking care that the polarity is correct.
4. Insert the **WP-121** into the wall box opening and secure the **WP-121** front panel using the screws.

1 Connect the wire labeled "+" to the +12V pin, and the wire labeled "–" to the GND pin

5.2 Connecting the WP-121

To connect the WP-121 as illustrated in the example in Figure 5:

Note: Do **not** connect both the RJ-45 and terminal block connectors to receivers. If you do so, neither will work.

1. Connect the UXGA source to the PC IN connector (for example, a computer graphics source).
2. Connect the unbalanced stereo source to the AUDIO IN connector (for example, the audio signal from the computer graphics source).

5.3 Grounding the Wall Plate

Grounding the **WP-121** is recommended.

The grounding wire is connected to the rear of the chassis of the unit.

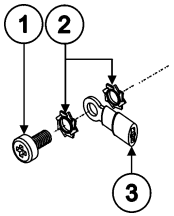


Figure 6: WP-121 Grounding Components

Table 3: WP-121 Grounding Screw Descriptions

#	Item
1	M3x6 Screw
2	M3 Toothed lock washers
3	M3 Ring tongue terminal

The grounding screw is used to earth the chassis of the unit to the ground of the building, thus preventing static electricity from interfering with the product's performance.

To connect the grounding to the WP-121 as illustrated in Figure 6:

1. Crimp the ring-tongue terminal to the building grounding point wire. (We recommend that you use a green-yellow #18 AWG wire (0.82mm^2) crimped with a proper hand-tool).
2. Insert the M3x6 screw through the toothed lock washers and the ring-tongue terminal in the order shown above.
3. Insert the M3x6 screw (with the two toothed lock washers and ring-tongue terminal in place) into the grounding screw hole on the rear of the **WP-121** and tighten the screw.

5.4 Wiring the TP Line Output Connectors

5.4.1 Wiring the RJ-45 Line Output Connector

Table 4 and Figure 7 define the STP pinout using a straight through cable with RJ-45 connectors. Connect/solder the cable shield to the connector shield.

Table 4: TP Connector Pinout

EIA /TIA 568A	
PIN	Wire Color
1	Green/White
2	Green
3	Orange/White
4	Blue
5	Blue/White
6	Orange
7	Brown/White
8	Brown
Pair 1	4 and 5
Pair 2	3 and 6
Pair 3	1 and 2
Pair 4	7 and 8

EIA /TIA 568B	
PIN	Wire Color
1	Orange/White
2	Orange
3	Green/White
4	Blue
5	Blue/White
6	Green
7	Brown/White
8	Brown
Pair 1	4 and 5
Pair 2	1 and 2
Pair 3	3 and 6
Pair 4	7 and 8

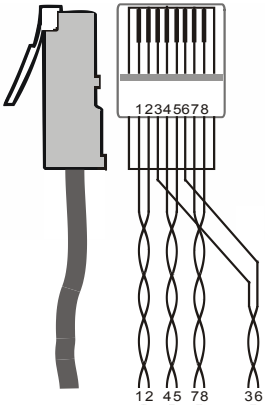


Figure 7: TP Connector

5.4.2 Wiring the 9-Pin Terminal Block Line Output Connector

The 9-pin terminal block is a plug-in connector for attaching the STP cable. Follow the colors of the color-coded sticker on these terminals for proper connection of the cable.

Figure 8 defines the pinouts for the terminal block.

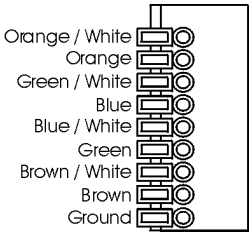


Figure 8: Terminal Block Pinouts

Notes:

- Use the connector clips only when removing wires, not when inserting them
- Each wire should protrude 9mm (0.35") from the plastic insulation so that it can be easily connected. To prevent the wires crossing, be sure that each wire is fully inserted

6 Capturing the EDID

The EDID can either be captured automatically by the **WP-121** transmitter, or you can set it manually with one of the preconfigured values (see Table 5).

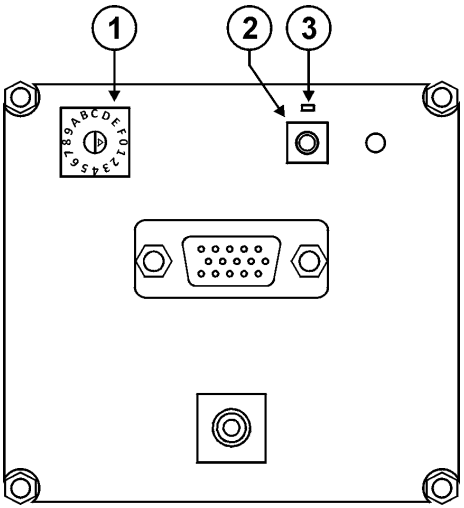


Figure 9: WP-121 PCB Assembly Front View with Face Plate Removed

Table 5: WP-121 PCB Assembly Features

#	Feature	Function
1	16 Position Rotary Switch	Turn to select the EDID resolution and refresh rate (see Table 6)
2	EDID Capture Button	Press to capture the EDID
3	EDID Status LED	Flashes slowly when capturing a valid display EDID, Lights solid when EDID has been successfully captured, Flashes rapidly when setting a preconfigured EDID

6.1 Capturing the EDID from a Display Device

To capture the EDID from a display device:

1. Using a Philips screwdriver, remove the four screws holding the faceplate to the PCB assembly.
2. Using a short cable[1], connect the PC IN input 15-pin HD connector on the **WP-121** to the XGA connector of the display and turn the display on.
3. Ensure that the rotary switch (see Figure 9) is in position 0. If it is not, use a small screwdriver to turn it to 0.

1 For example, Kramer model number C-MGM/MGM-1

4. Connect the 12V DC power adapter to the power terminal block (see Figure 2) on the **WP-121** and connect the adapter to the mains electricity.
5. Press the EDID capture button (see Figure 9).
   The EDID status LED flashes slowly several times. The new EDID is captured when the LED stops flashing and lights solid.
6. Unplug the power adapter from the mains and disconnect it from the **WP-121**.
7. Replace the faceplate and secure the four screws removed in Step 1.

6.2 Setting a Preconfigured EDID

To set a preconfigured EDID:

1. Using a Philips screwdriver, remove the four screws holding the front panel to the rear PCB assembly.
2. Using a small screwdriver, turn the rotary switch (see Figure 9) to the required position as defined in Table 6.
3. Connect the 12V DC power adapter to the power terminal block (see Figure 2) on the **WP-121** and connect the adapter to the mains electricity.
4. Press the EDID CAPTURE button (see Figure 9).
   The EDID status LED flashes rapidly several times. The new EDID is captured when the LED stops flashing and lights solid.
5. Unplug the power adapter from the mains and disconnect it from the **WP-121**.
6. Replace the faceplate and secure the four screws removed in Step 1.

Table 6: Rotary Switch EDID Resolution Settings

Rotary Switch Position	Resolution	Refresh Rate
0 (Default)	1024x768	60Hz
1	800x600	60Hz
2	1024x768	60Hz
3	1152x864	75Hz
4	1280x720	60Hz
5	1280x800	60Hz
6	1024x1024	60Hz
7	1360x768	60Hz

Rotary Switch Position	Resolution	Refresh Rate
8	1440x900	60Hz
9	1440x1050	60Hz
A	1600x1200	60Hz
B	1680x1050	60Hz
C	1920x1080	60Hz
D	1920x1200	60Hz
E	For future use	
F	For future use	

7 Technical Specifications

Table 7 lists the technical specifications of the **WP-121**.

Table 7: Technical Specifications[1] of the WP-121

INPUTS:	1 UXGA on a 15-pin HD (F) connector 1 Unbalanced stereo audio on a 3.5mm mini jack 1 Power 12V DC on 2-pin removable terminal block	
OUTPUTS:	1 STP on a 9-pin terminal block with springs 1 STP on an RJ-45 connector	
MAX. OUTPUT LEVEL:	Video: 2Vpp	Audio: 2.8Vpp
RESOLUTION:	Up to UXGA, 1080p	
AUDIO BANDWIDTH:	18KHz	
DIFF. GAIN:	1.8%	
DIFF. PHASE:	0.3 Deg	
K-FACTOR:	<0.05%	
S/N RATIO:	Video: 60dB @ 5MHz	Audio: 71dB @ 1KHz
COUPLING:	Video: AC	Audio: AC
AUDIO THD + NOISE:	0.07%	
AUDIO 2nd HARMONIC:	0.001%	
POWER SOURCE:	12V DC 340mA (feeding a TP-112 or TP-122-od receiver)	
OPERATING TEMPERATURE:	0° to +55°C (32° to 131°F)	
STORAGE TEMPERATURE:	-45° to +72°C (-49° to 162°F)	
HUMIDITY:	10% to 90%, RHL non-condensing	
DIMENSIONS:	11.4cm x 3.1cm x 11.4cm (4.5" x 1.2" x 4.5") W, D, H	
WEIGHT:	0.14kg (0.31lbs) approx.	
ACCESSORIES:	Power adapter	

1 Specifications are subject to change without notice

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
   i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   ii) Product modification, or failure to follow instructions supplied with the product
   iii) Repair or attempted repair by anyone not authorized by Kramer
   iv) Any shipment of the product (claims must be presented to the carrier)
   v) Removal or installation of the product
   vi) Any other cause, which does not relate to a product defect
   vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC* Rules and Regulations: Part 15: "Radio frequency devices Subpart B Unintentional radiators"

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

* FCC and CE approved using STP cable (for twisted pair products)

For the latest information on our products and a list of Kramer distributors visit www.kramerelectronics.com **where updates to this user manual may be found.**
We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

Kramer Electronics, Ltd.
Web site: www.kramerelectronics.com
E-mail: info@kramerel.com
P/N: 2900-000622 REV 3